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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,844	10/29/2003	Simon Magarill	58498IUS005	7836

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EXAMINER	
DETSCHEL, MARISSA	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,844	MAGARILL ET AL.	
	Examiner	Art Unit	
	Marissa J. Detschel	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 7-20* is/are rejected.

7)☒ Claim(s) *1,2, and 4-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/13/04, 4/26/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The Information Disclosure Statements filed on February 13, 2004 and April 26, 2004, have been fully considered by the Examiner except for document A2 of the one filed April 26, 2004. Examiner believes this Document Number should be US 2002/0024742, as opposed to US 2002/024742 as presented on the Information Disclosure Statement filed on April 26, 2004.

Claim Objections

Claims 12-17 are objected to because of the following informalities:

Claims 12-14 are drawn towards "The method of Claim 9 wherein the projection system constructed in step (IV) has a calculated light transmission efficiency..." Claims 15-17 are drawn towards "A projection system constructed in accordance with Claim 9 wherein the system has a calculated light transmission efficiency..." Claim 9 is drawn towards "A method for constructing a projection system comprising..." Step (IV) of claim 9 is drawn towards "constructing a projection system using the light source selected in step (II) and the filters selected in step (III)." Step (II) and Step (III) of Step (IV) of claim 9 is dependent on Step (I) of claim 9 and, therefore, the entire method of claim 9 comprising Steps (I) through (IV). Therefore, since Claims 12-14 are drawn towards the projection system constructed in step (IV) in the method of claim 9, and Claims 15-17 are drawn towards a projection system constructed in accordance with the method of claim 9, Claims 12-14 and Claims 15-17 cover the same grounds comprising the calculated light transmission efficiency of the projection system constructed in accordance to the method of claim 9. These two sets of claims represent duplicate sets, and it is requested by the Examiner that one of these sets of claims be removed.

Claims 1, 2, 4-14, and 18 are objected to because of the following informalities:

These claims include parentheses around the labels for the claim sections, such as (i), (ii), (iii), (A), (B), (C), (D), (a), (b), (c), (d). When these claim sections are included in the dependent claims, because of the use of the parentheses, it becomes uncertain as to whether or not these claims should include these sections. Examiner suggests taking out the parentheses from around the labels of the claim sections.

As to claim 1, this claims includes two sets of the same labels for claim parts. The labels of (i), (ii), and (iii) are used in the preamble of the claim and part D of the claim. Examiner suggests changing one of these to a label such as 1, 2, and 3.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 sites a limitation of "when" in part (D) of claim 9. This use of "when" is a form of alternative language and introduces a metes and bounds issue. Therefore, it is uncertain as to if this claim should include the limitations incorporated in part (D). Examiner suggests making this limitation be included in the claim by incorporating the limitations presented in the first part of the claim directed towards color filters, as in part (C). For the purposes of examination, Examiner included this limitation with part (C) in the further examination of this claim.

Claims 19 and 20, which are dependent from claim 18, inherit the problems of this claims, and are therefore also rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sedlmayr (USPN 6,697,197).

Regarding claim 1, Sedlmayr discloses a method for determining a target spectrum for a light source in a projection system in which light from the source is:

(i) split into sub-portions either spatially or in time

The light beam in Sedlmayr's device is split spatially using a series of mirrors (80, 84, and 86) that are designed to reflect light beams of specific wavelength ranges illustrating the red, green, and blue beam (column 44, lines 29-35 for red, column 45, line 58 to column 46, line 6 for the blue and green)

(ii) the sub-portions are filtered through red, green, and blue filters, and

The sub-portions (132, 154, 156) of Sedlmayr's device are filtered through red (82) and blue (88) mirrors that allow further filtering of the beam so that it will pass wavelengths above or

below a set limit, to make the beam appear a deeper color to the human eye and to match the CIE response needed for a good color balance (column 44, lines 43-49 for red, and column 47, lines 1-10 for blue). Sedlmayr does not disclose using a mirror to further filter the green beam in the same manner as the red and the blue filter to make the green beam appear a deeper green. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a mirror to further filter the green beam in order to make the beam appear a deeper color to the human eye and to match the CIE response needed for a good color balance, resulting in a good color balance for the output of the projector system after the red, blue, and green beams are recombined, and, therefore, a more accurate representation of color for the output of the projector system.

(iii) the filtered sub-portions are recombined as a colored image on a screen, said method comprising:

The filtered sub-portions are recombined as a colored image on a screen in Sedlmayr's device (column 47, lines 53-57).

(A) specifying desired color coordinates for red light, green light, and blue light;

The color coordinates for the red, green, and blue light are represented by the wavelength separations of the beams into their respective colors by the mirrors (80, 84, and 86) (column 44, lines 29-35 for red, column 45, line 58 to column 46, line 6 for the blue and green).

(B) specifying desired color coordinates for while light produced by the splitting/filtering/recombining process;

If the color coordinates for the red, green, and blue lights are specified, as in step (A), then the white light produced by the recombination of the light beams will also include specified color coordinates.

(C) specifying a set of filter characteristics for the red, green, and blue filters; and

These filter characteristics are represented by the further filtering involved in the method of Sedlmayr. The sub-portions (132, 154, 156) of Sedlmayr's device are filtered through red (82) and blue (88) mirrors that allow further filtering of the beam so that it will pass wavelengths above or below a set limit, to make the beam appear a deeper color to the human eye and to match the CIE response needed for a good color balance (column 44, lines 43-49 for red, and column 47, lines 1-10 for blue). Sedlmayr does not disclose using a mirror to further filter the green beam in the same manner as the red and the blue filter to make the green beam appear a deeper green. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a mirror to further filter the green beam in order to make the beam appear a deeper color to the human eye and to match the CIE response needed for a good color balance, resulting in a good color balance for the output of the projector system after the red, blue, and

green beams are recombined, and, therefore, a more accurate representation of color for the output of the projector system.

(D) determining either (i) a target spectrum for the light source or (ii) a combination of a target spectrum for the light source and a revised set of filter characteristics for red, green, and blue filters based on a combination of criteria which includes:

(a) reducing differences between calculated color coordinates for filtered red light, filtered green light, and filtered blue light and the specified desired color coordinates for those lights;

(b) reducing differences between calculated color coordinates for recombined white light and the specified desired color coordinates for that light; and

(c) increasing calculated light transmission efficiency for the splitting/filtering/recombining process.

Sedlmayr discloses that the selection of wavelengths applicable to the mirrors for further filtering of the red, blue, and green beams as set forth above in this office action can be judicially applied so that the color balances of the different beams can be adjusted for color balance of the final output (column 48, lines 15-19). This selection of wavelengths represents a reduction of differences between calculated color coordinates for the filtered lights and the specified color coordinates for the lights. The calculated color coordinates for the filtered lights are represented by a combination of the wavelength separations of the beams into their respective colors by the mirrors (80, 84, and 86) as set forth above, and the further filtering of the beams by the other set

of mirrors as set forth above (80 and 88). The specified desired color coordinates would be the colors as projected out of the system with the correct color balance. The adjustment of the selection of the wavelengths applicable to the mirrors to adjust the color balance of the beams and the output reduces any differences in the color balance of the projected output. The adjustment to the selection of wavelengths to the mirrors for correction of color balance represents a target spectrum.

Furthermore, the light transmission efficiency for the splitting/filtering/recombining process is increased with this method because the filters can be adjusted to make the colors appear deeper than they are. The colors do this by reflection of more of the blue, red, and green light by adjusting the selection of wavelengths applicable to filtering mirrors. Therefore, the light transmission efficiency is increased with an adjustment to the selection of wavelengths applicable to the mirrors because more light is allowed to transmit through the projection system.

Regarding claim 2, in step (C) Sedlmayr's set of filter characteristics for the red, green, and blue filters are specified in terms of cutoff points for the filters (column 44, lines 31-49 for red, column 45, line 64 to column 46, line 3 for green and column 47, lines 1-13 for blue). The cutoff points for the filter are represented by the wavelength they do not allow to reflect off them.

In regards to claim 3, the set of filter characteristics for Sedlmayr are for ideal red, green, and blue filters which respectively correspond to the actual red, green, and blue filters, and the cutoff points are equal to the 50% transmission points for the actual filters (Figures 14-18).

Regarding claim 4, in step (D), Sedlmayr's calculated light transmission efficiency is based on a calculated photopic weighted intensity for the target light source spectrum and a calculated photopic weighted intensity for the recombined white light (column 44, lines 42-49 and column 47, lines 1-10).

Photopic weighted intensity, according to the Applicant's disclosure, is obtained by taking a source's spectrum and passing it through a filter having the sensitivity of the human eye (page 2, lines 18-20). Sedlmayr teaches using mirrors (82 and 88) to filter the red and blue light beams to wavelengths that are a deeper blue or red to the human eye (i.e. filter's sensitive to the human eye). This is done by shifting the mirror curve of the mirror so that it will pass wavelengths below or above a certain wavelength value, reflecting off the remaining wavelengths that are a deeper blue or red. Sedlmayr further discloses that the selection of wavelengths applicable to these mirrors can be applied for color balance of the final output of the projection device (column 48, lines 15-19). These deeper blue or red beams are what will be recombined with the green beam will be present in the final output of the projection device, and thus, the photopic weighted intensity will be present in the recombined white light.

In regards to claim 7, Sedlmayr discloses a method wherein the target spectrum for the light source or the combination of the target spectrum for the light source and the revised set of filter characteristics for the red, green, and blue filters is determined iteratively. The selection of the wavelengths applicable to the further filtering mirrors as set forth above can be judicially applied to adjust the color balance of the final output of the projection device. This adjustment to the selection of the wavelengths can be performed iteratively to maintain a target spectrum for the light source.

Regarding claim 8, only a target spectrum for the light source is determined using the method of Sedlmayr. The target spectrum has been identified in the office action above as the adjustment to the selection of wavelengths to the further filtering mirrors for correction of color balance of the output in the projection system.

In regards to claim 9, Sedlmayr discloses a method for constructing a projection system comprising:

(I) determining a target spectrum for a light source using the method of claim 1 as cited above;

(II) selecting a light source based on step (I)

(III) selecting red, green, and blue filters based on a set of target filter characteristics for those filters where the set of target filter characteristics are either the set of filter characteristics specified in step (C) of claim 1 or, if revised, the revised set of filter characteristics determined in step (D) of claim 1; and

(IV) constructing a projection system using the light source selected in step (II) and the filters selected in step (III)

Sedlmayr discloses the use of the light source and filtering mirrors as set forth in the method of claim 1 above for a projection system as illustrated in a projection system (Figure 8). Therefore, Sedlmayr discloses a method for constructing a projection system using the light source and filtering mirrors using the method of claim 1.

Regarding claims 10 and 11, the spectrum of the light source selected in step (II) of claim 9 is not identical to the target spectrum determined in step (I), and the filter characteristics of the red, green, and blue filters selected in step (III) are not identical to the set of target filter

characteristics in Sedlmayr's method. If this were the case, then there would be no reason to allow the method of selection of the wavelengths of the device to be judicially applied since the spectrums and filter characteristics would match, and, therefore, would need no adjustment.

Regarding claims 12-17, Sedlmayr discloses the claimed invention except constructing a projection system with a calculated light transmission efficiency for the splitting/filtering/recombining process of at least 75%, 85%, and 95%. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to use a calculated light transmission efficiency for the splitting/filtering/recombining process in a projection system of at least 75%, 85%, and 95% since it has been held that discovering an optimum value of a result effective variable involves on routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). By using these values of at least 75%, 85%, or 95% for the calculated light transmission efficiency for the splitting/filtering/recombining process in a projection system, more light is being gathered by the projection system, resulting in a more accurate representation of the output from the system resulting from the splitting/filtering/recombining process.

Regarding claim 19, Sedlmayr discloses a projection system comprising a light source and a plurality of color filters wherein:

(A) the light source has a measured distribution of optical power as a function of wavelength $S(\lambda)$ (column 42, lines 17-25)

(B) the light source has a photopic weighted intensity $Y(\lambda)$obtained by mathematically filtering $S(\lambda)$ with a filter having the sensitivity of the human eye;

Photopic weighted intensity, according to the Applicant's disclosure, is obtained by taking a source's spectrum and passing it through a filter having the sensitivity of the human eye (page 2, lines 18-20). Sedlmayr teaches using mirrors (82 and 88) to filter the red and blue light beams of $S(\lambda)$ to wavelengths $Y(\lambda)$ that are a deeper blue or red to the human eye (i.e. filters sensitive to the human eye). This is done by shifting the mirror curve of the mirror so that it will pass wavelengths below or above a certain wavelength value, reflecting off the remaining wavelengths that are a deeper blue or red. (column 44, lines 42-49 and column 47, lines 1-10).

(C) the color filters have measured 50% cutoff points (Figures 14-18); and

(D) when:

(i) the measured 50% cutoff points are used to define ideal filters,

(ii) the ideal filters are mathematically applied to $S(\lambda)$to produce a plurality of filtered lights, and

A series of mirrors (80, 84, and 86) are applied to the light source to create separate red, blue, and green light beams in the device of Sedlmayr. (column 44, lines 29-35 for red, column 45, line 58 to column 46, line 6 for the blue and green). These separate red, blue, and green light beams represent a plurality of filtered lights.

(iii) the plurality of filtered lights are mathematically combined to produce simulated white light (column 47, lines 53-57).

Sedlmayr does not disclose that the simulated white light has a calculated photopic weighted intensity Yb(λ) the integral of which is at least 75% of the integral of Y(λ) over the visible spectrum. Furthermore, regarding claims 19 and 20, at least 85% and 95% were not disclosed as this value for the integral of Y(λ) either.

Regarding claims 18-20, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to use a light device in a projection system having these values for the integral of Y(λ) since it has been held that discovering an optimum value of a result effective variable involves on routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). By using these values of at least 75%, 85%, or 95% of the integral of Y(λ)over the visible spectrum as the calculated photopic weight intensity of Yb(λ)for the simulated white light, more light is being gathered by the projection device, resulting in a more accurate representation of the simulated white light that is projected from the device.

Allowable Subject Matter

Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 5, the prior art of record, taken alone or in combination, fails to disclose or render obvious the method of increasing light transmission frequency by minimizing additional filtering of red, blue, and green light beyond that introduced by reducing differences between calculated color coordinates for filtered light and specified desired color coordinates for the light in a method for determining a target spectrum for a light source, in combination with the rest of the limitations of claim 5.

As to claim 6, the prior art of record, taken alone or in combination, fails to disclose or render obvious the method of determining a target spectrum for a light source for a projection system wherein reducing differences between calculated color coordinates for filtered red, blue, green light, and recombined white light and specified desired color coordinates for the lights takes precedence over increasing calculated light transmission efficiency for a splitting/filtering/recombining process, in combination with the rest of the limitations of claim 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marissa J Detschel
February 15, 2006
MJD

Gregory J. Toatley, Jr.
Supervisory Patent Examiner
12 FEB 06